Table 18. Test results of hypotheses that there were no differences in indicator assessment scores between ECU and consultant field personnel. Two-tailed paired sample t-tests were used to test the null hypotheses. Values are t-values. Rejected tests are in underlined, cases where ECU team scored lower are in parentheses. Channel-riparian zone connection was scored for both sides only in the urban high order reaches; those results were pooled (df=5, CV=2.571). For reaches where a beaver impoundment flooded the channel, SR, CRZC, and SBS were not scored, thus changing the degrees of freedom (df) for those tests.

	Rural low order (df=15)	Rural high order (df=4)	Urban low order (df=4)	Urban high order (df=2)
Critical value of $t_{0.05(2)}$ w/o beaver-flooded channel	2.131	2.776	2.776	4.303
Critical value of $t_{0.05(2)}$ w/ beaver beaver-flooded channel	2.160	3.182	NA	NA
Riparian Zone Cover	(0.627)	(2.253)	0.820	(1.521)
Near-stream Cover	(0.420)	(2.115)	1.154	0.936
IWS: Instream woody structure	2.611	-	(0.146)	(0.788)
SR: Sediment regime	1.849	(0.225)	0.590	2.500
CRZC: Channel-riparian zone connection	(1.791)	(1.633)	(2.087)	(6.928)
PAS: Pollution affecting stream	1.595	1.500	(2.087)	1.992
FARZ (LEFT): Factors affecting riparian zone	0.267	(1.612)	(0.894)	(1.344)
FARZ (RIGHT): Factors affecting riparian zone	(0.249)	(1.580)	(1.871)	(0.756)
HQRZ (LEFT): Habitat quality of riparian zone	(0.457)	(2.449)	0.786	(0.277)
HQRZ (RIGHT): Habitat quality of riparian zone	1.017	(0.583)	0.516	1.109
SBS (LEFT): Stream Bank Stability	NA	(0.775)	-	0.866
SBS (RIGHT): Stream Bank Stability	NA	1.192	(2.683)	0.866

scoring criteria (Appendix A). For “Instream woody structure,” decay classes of large down wood (LDW) have now been more narrowly defined, which may improve precision for scoring that indicator. Discrepancies in scoring “Channel-riparian zone connection” in the urban high order reaches are more problematic and may be attributable to the difficulty in determining the degree to which incision (typical for urban reaches) is affecting the frequency or duration of overbank flow. On one hand, an urban stream becomes incised because an increase in impervious surface causes unnaturally large flow pulses during storm runoff. On the other hand, these high flow pulses are more likely to reach overbank stage (leaving indicators on the floodplain) before flow subsides.

During low flows, the floodplain is drained more than normal due to the increase in the groundwater slope toward the channel of incised streams. Therefore, indicators of overbank flow (wrack, sediment, water marks) may not reliably signify a normal connection between the riparian zone and channel in incised, urban streams. The negative correspondence between scoring by ECU vs. consultant teams indicates that the “Channel-riparian zone connection” indicator is in need of additional calibration in urban streams. At this time, we do not have data to adequately explain the relationship between channel incision and riparian zone hydrologic regime in urban coastal plain streams. Further research is needed in this regard. In fact, further work is needed on the urban assessment protocol, in general, because the reference data set used to calibrate indicators was limited.